

SCIENTIFIC SERIAL.

THE latest issue of the *Memoirs (Trudy)* of the Society of Naturalists at the St. Petersburg University, Section of Geology and Mineralogy (vol. xxvii., fasc. 5, 1899), will be found most interesting for mineralogists and petrologists—the more so as each paper, in Russian, is followed by a full, detailed summing up in German. The volume is edited by K. von Vogdt, and contains three important papers. The first, by M. Boris Popoff, is upon the elipsoidal inclusions contained in that most interesting granite, the Rappa-kivi (“rotten stone”) of East Finland. It is an excellent, very well-written analysis of the different porphyry-like inclusions which are found in the granite—some of them surrounded by an oligoclase-envelopment and with defined outlines, while the others are devoid of that envelope, and in this case have an undefined or a wave-like surface. To explain the appearance of the different sorts of inclusions being mixed together in this granite, the author resorts to the hypothesis of a slow motion of the crystallised ovoids, formed in different parts of the mass, but consequently moving about within it during the cooling of the mass. The second paper is a note on a variolite found on the left bank of the Lower Yenisei. The third paper is a detailed work (353 pp. in Russian, and 37 pp. of German *résumé*), by B. Polenov, on the massive rocks of the northern parts of the Vitim plateau of East Siberia. The author has most carefully worked out the beautiful collection of samples of rocks which was brought in, in 1865, by the mining engineer, I. A. Lopatin. A most elaborate descriptive catalogue of this collection has already been published a couple of years ago by B. Polenov. Now he gives a summary of the geological conclusions which may be drawn out of this collection. He begins his work by a most valuable sketch of the geological structure of the plateau, based on Lopatin's, Kropotkin's and Tchershky's explorations; this sketch (28 pp.), unfortunately, is not summed up at all in German. The remainder of B. Polenov's work (325 pp.) is given to a careful discussion of the various rocks entering into the composition of the plateau—namely, the oldest granites with their subordinate syenites and gabbro-norites; the younger group of plagioclase rocks—syenites, diorites, and diabase rocks; and the youngest group of basalts which cover the plateau on immense stretches; and, finally, the metamorphism phenomena which have been going on in all these rocks. A number of plates accompany the papers.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, December 7, 1899.—“Vapour-density of Bromine at High Temperatures.” By E. P. Perman, D.Sc., and G. A. S. Atkinson, B.Sc. Communicated by Prof. Ramsay, F.R.S.

The authors have determined the vapour-density of bromine at temperatures ranging from 600° to 1050° by a modification of the Damas method, from which it differs in the following particulars:—

(1) The globe was filled with bromine by repeated exhaustion and admission of bromine vapour.

(2) The bromine was drawn off by repeated exhaustion and admission of air, collected in a solution of potassium iodide, and estimated by titration with sodium thiosulphate solution.

(3) The globe remained in position (in a muffle furnace) the whole time.

Temperature was determined by means of a Le Chatelier pyrometer. The chief results are as follow:—

Temperature.	Pressure.	Mean
About	Atmospheric.	Vapour-density.
650°	“	80.0
830°	“	79.7
900°	“	78.6
950°	“	77.5
1015°	“	76.7
1050°	“	74.3
1040°	755 mm.	76.0
“	319	73.9
“	189	73.3
“	47	71.8

By plotting the results at atmospheric pressure on a curve, it is seen that dissociation begins at about 750° C.

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These results are in accordance (as far as they can be compared) with those of V. Meyer and Crafts, but in opposition to those of J. J. Thomson, who found dissociation to take place at about 100° C. on continued heating.

December 14, 1899.—“Observations on the Morphology of the Blastomycetes found in Carcinomata.” By Keith W. Monsarrat, M.B., F.R.C.S.E.

The research was undertaken to confirm, if possible, the observations of Sanfelice, Roncali and others on the presence of organisms of the order Blastomycetes in Carcinomata, and to study the morphology of the same.

The observations may be arranged under four headings:—

(1) Isolation by Culture. (2) Staining Reactions. (3) Histology. (4) Tissue Reactions following Inoculation.

I. Isolation. Out of a large number of Carcinomata examined a positive result has up to the present been obtained only in the case of one Carcinoma of the breast. In this case a growth was obtained on glucose agar of an organism, the morphological characters of which are described below. The method of making inoculations on to media was by making numerous incisions into the growth with a sterile knife and insinuating the scrapings from the edges of these. The organisms grow readily both aerobically and anaerobically at 37° C.

II. Staining Reactions. In the lesions produced by inoculation of the organism, the staining reactions were studied by a variety of methods, of which a modification of the method of Cladius for bacteria gave the most distinctive results, after fixation in Flemming's solution. By using this method for human Carcinomata both extra- and intracellular forms of cancer-bodies are distinctively stained.

III. The morphological characters of the organism are as follows: Fresh specimens from cultures are spherical, from four to ten microns in diameter, and in most cases take an aniline chromatin stain diffusely. From this type there are all variations up to that in which no chromatin at all is to be observed. There is a capsule varying in density; multiplication takes place by budding. In certain cases, however, spore formation takes place. This was observed only in secondary nodules in certain organs, which followed growths in the peritoneum produced by inoculation. It consists in a thickening of the capsule, the breaking up of the chromatin of the cell into discrete particles, and the escape of the latter through a dehiscence in the capsule. There is no regularity in this process, no simultaneous division of the cell contents into a definite number of spores, and no simultaneous shedding of the same, as in the case of members of the Blastomycetes Group.

IV. Tissue Reactions. Intraperitoneal injection in guinea-pigs has alone been used so far. One c.c. of a 48-hours old culture was injected in each case. Stated briefly, the results consisted in a production of “tumours” of endothelial elements in the peritoneum, and secondary nodules in lungs, liver, spleen and kidneys of a similar type. When brought in contact with endothelium, the organism is capable of stimulating proliferation and causing the production of new growths locally and in organs distant from the seat of inoculation.

Geological Society, December 20, 1899.—W. Whitaker, F.R.S., President, in the chair.—Dr. P. L. Sclater exhibited a large diagram of a new bore lately made for the Zoological Society of London, in the bottom of the old well in the Society's Gardens, Regent's Park. The section was a valuable addition to the literature of the water-supply from wells in the surrounding district.—On some effects of earth-movement on the Carboniferous volcanic rocks of the Isle of Man, by G. W. Lamplugh (communicated by permission of the Director-General of the Geological Survey). The author, since the completion of his survey of the Isle of Man, has studied the coast-section in the Carboniferous volcanic series between Castleton Bay and Poylvash, with the result that he has discovered evidence that the strata have undergone much deformation in pre-Triassic times. In the western part of the outcrop the volcanic material consists almost wholly of tuff, in places bedded and fossiliferous; in the eastern part exists a chaotic mass of coarse and fine fragmental volcanic material, traversed by ridges of basaltic rock, and containing entangled patches of dark limestone. The author now considers that the larger lenticles and most of the smaller blocks of limestone have been torn up from the underlying limestone-floor during a sliding forward or overthrusting of the volcanic series upon it. The phenomena

described may be explained as the effects of earth-movement on a group of rocks consisting of limestone passing up into tuff, interbedded with lava-flows, and possibly traversed by sills or dykes of basaltic rock. The results of the disturbance appear to be limited vertically and horizontally, and to have been determined by the differential resistance of the component rocks. Analogous features occur in the Borrowdale volcanic series and in the Silurian volcanic rocks of Portaine. The President, after congratulating the author on his paper, read the following extract from a letter that he had received from Sir Archibald Geikie, who was unable to be present:—"Having been twice with Mr. Lamplugh over the ground which he describes, the second time quite recently, since his present views as to earth-movement were formed and matured, I am glad to bear my testimony to the exhaustive care which he has expended on the research. I agree with him on the main point—that there is conclusive evidence of considerable earth-movement since the deposition of the Carboniferous volcanic rocks at the southern end of the Isle of Man. He seems to me to have established this point beyond dispute."—The zonal classification of the Wenlock shales of the Welsh borderland, by Miss Gertrude L. Elles. This paper deals with the Wenlock rocks of Builth, the Long Mountain, and the Dee Valley. The results obtained by the author completely confirm the work of Tullberg on the Wenlock shales of Southern Sweden. In the discussion which followed, Prof. C. Lapworth pointed out the extreme interest of this paper, both from the stratigraphical and from the palaeontological point of view. The zonal mapping of the Welsh Silurians commenced by Prof. Watts, carried through the Rhayader Valentian by Mr. Herbert Lapworth, had here been brought out in detail stage by stage through the Wenlocks of the Welsh border by the author.—On an intrusion of diabase into Permo-Carboniferous rocks at Frederick Henry Bay (Tasmania), by T. Stephens. The relationship of the abundant diabase to the Permo-Carboniferous strata of the island has been long a matter of dispute. Among others, Jukes describes sections which appeared to confirm the view that Permo-Carboniferous sediments were deposited round vast masses of igneous rock previously cooled and denuded. The author has identified and visited the sections, and finds in one that, although there is a step-like junction between the sediments and the igneous rock, it is the result of the intrusion of diabase, and not of the deposition of sediment. The sediment, which is fossiliferous, is converted into an intensely hard whitish marble, and the associated shale-bands into chert. The diabase, which is ordinarily an ophitic rock, acquires at the junction a finely crystalline-granular texture. Jukes's second section also gives undoubted evidence of intrusion.

Mathematical Society, January 11.—Lieut.-Colonel Cunningham, R.E., Vice-President, in the chair.—Prof. Love, F.R.S., communicated a paper, by Mr. J. H. Michell, on elementary distributions of plane stress.—Lieut.-Colonel Cunningham (Mr. Kempe, F.R.S., *pro tem.* in the chair) gave a preliminary sketch of a general method of factorisation of biquadratics, with special application to quartans, $N = x^4 + y^4$.—The following abstract of a paper by Prof. H. Lamb, F.R.S., entitled "A Problem in Resonance, illustrative of the Mechanical Theory of Selective Absorption of Light," was read by Mr. Tucker.—The impact of sound-waves on a fixed spherical obstacle was discussed by Lord Rayleigh in a well-known paper (*Proc. Lond. Math. Soc.*, vol. iv. p. 253, 1872), which also treats briefly the case where the sphere is movable, but is urged towards a fixed position by a force varying as the displacement (*loc. cit.* p. 272). In the present paper this latter problem is studied under a more general form, it being supposed that the sphere is capable of various independent modes of free vibration; and special attention is directed to the case where there is coincidence, or approximate coincidence, between the period of the incident waves and that of one of the free modes. The immediate acoustical importance of the question is perhaps not very great, since massive bodies are not usually set into vigorous sympathetic vibration by the direct impact of air-waves (the extreme precision of tuning that would be required militates against this), but rather through the intermediary of resonance-boxes and sounding boards. The problem has, however, an interest in another direction, as furnishing an analogy by which we can illustrate, without any great expenditure of analysis, the mechanical theory of selective absorption of light in a gas.—A paper by Dr. L. E. Dickson, an abstract simple group of order 25920, was also communicated.

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MANCHESTER.

Literary and Philosophical Society, January 9.—Prof. Osborne Reynolds, F.R.S., Vice-President, in the chair. Mr. Thomas Thorp exhibited two film-gratings of a ruling designed to weaken the image and to condense the illumination in the spectra of the first and second order, and thus to compete with the prism spectrum in brilliancy.—Geometrical representation of the relation between wave-velocity and group-velocity, by Prof. Horace Lamb, F.R.S. In any medium where the wave-velocity varies with the wave-length, a simple geometrical representation of the *group-velocity* is obtained by constructing a curve with the former magnitude as ordinate and the latter as abscissa. The group-velocity is then given by the length intercepted by the tangent to the curve on the axis of γ . Thus, for gravity waves on deep water the curve is a parabola, and it appears at once that the group-velocity is one-half the wave-velocity, as is well known. Various other cases are illustrated in like manner; in particular, the case when the waves are of such moderate length that both gravity and surface-tension have to be taken into account. The existence of a minimum group-velocity, equal to 1.211 times the minimum wave-velocity, is pointed out.

EDINBURGH.

Royal Society, January 8.—Sir William Turner in the chair.—Dr. W. Craig MacLagan read a paper on two historical fallacies: Heather Beer and Uisge Beithe. After discussing the various literary references and oral traditions concerning heather beer, the author proceeded to describe his own attempts to brew the so-called ale according to several detailed recipes. In this he had the valuable assistance of Mr. Melvin, of the Boroughloch Brewery, Edinburgh. All attempts to obtain from heather a decoction capable of alcoholic fermentation failed absolutely. The tradition seems to have had its source in the idea that there must be sugar in the heather flower since bees visit it; but analysis proves that there is no real sugar present, but that there is beeswax. A similar investigation proved that the uisge beithe or birch ale had as fabulous an origin as heather beer.—Sir John Murray communicated a paper by Mr. R. E. Peake and himself on the Azores bank, and some recent deep-sea soundings in the North Atlantic. From Mr. Peake's soundings around the Azores, the configuration of the bottom could now be shown in great detail. In depths less than 2000 fathoms the bottom was found to be very irregular, the bank falling in some places from a depth of 1400 to 2400 fathoms within a distance of five miles. Four new "deeps" or depths exceeding 3000 fathoms had been discovered—the Peake Deep between the Azores and the English Channel, and the Libbey, Sigbee and Thoulet Deeps to the south of the "tail" of the banks of Newfoundland. Some remarkable differences in bottom temperature had been observed; for example, the temperatures taken on the southerly of two lines between the Azores and North America were about half a degree lower than those taken on the northerly line; and the temperatures along the northerly of two lines between the Azores and the British Isles were about three-quarters of a degree lower than the others.—Dr. W. Peddie and Mr. A. B. Shand, in a paper on the thermoelectric properties of solid and liquid mercury, described how by the use of solid carbonic acid they had traced the thermoelectric line of mercury well below its freezing-point. The line seemed to be a fairly continuous straight line down to the lowest temperature reached; it lay nearly parallel to the iron line, converging slightly so as to pass through a neutral point about -550°C . It cut the line of 0°C . a little below the copper line.—A paper was also read on an optical method of determining the density of sea-water, by Mr. John J. Manley. The apparatus used was the hollow quartz prism and spectrometer belonging to the Royal Society of London. Into this the various samples of sea-water were put in succession, and the deviations of the D line compared with the deviation due to distilled water. All precautions were taken, and the method was found to have several advantages as regards rapidity and convenience over the usual methods of comparing densities of sea-water.

Mathematical Society, December 12, 1899.—Mr. R. F. Muirhead, President, in the chair.—Dr. Peddie gave an address on the dissipation of energy in vibrating matter, with lime-light illustrations.—It was agreed that Professor Gibson's paper on Proportion be printed in the Society's *Proceedings*.

PARIS.

Academy of Sciences, January 2.—M. Maurice Lévy in the chair.—M. Ph. van Tieghem, the retiring President, announced to the Academy the changes that have occurred amongst the members and correspondents during 1899.—M. Maurice Lévy delivered a short address on taking the presidential chair.—On the anomaly in the movement of the fifth satellite of Jupiter, by M. O. Callandreau. This deviation, to interpret which M. Asaph Hall has suggested a modification of the Newtonian law of attraction, may perhaps be explained in a less drastic manner by admitting that for such bodies as the sun and Jupiter, at the surface of which observation has shown fluids in relative movement in the neighbourhood of the equator, the resultant of the forces, instead of being rigorously normal to the surface at each point, tends, near the equator, to bring the molecules of this plane nearer together.—On the plastic activity of animal cells, by M. L. Ranvier. Some serous secretion from the peritoneum of the rat, containing some air bubbles, was heated in a moist chamber at 30° to 36° . It was observed that the lymphatic cells moved towards the bubbles, and, on arriving at their surface, were flattened there as against a resisting body. If the whole is cooled down to 21° , the cells become again spherical. The name of plastic activity is given to this phenomenon, which is a vital one. The flattening of the lymphatic cells against resisting bodies had been noted previously by the author; but it had not appeared to be possible that this effect could be produced by an air bubble.—On the culture of white lupins, by MM. P. P. Dehérain and C. Demoussy. As the result of three years' cultures, it was found that the white lupin does not attain its full development when there are no nodules on the roots. These nodules, when present, may differ greatly in size and appearance, the maximum assimilation of nitrogen corresponding with the smallest nodules.—The Perpetual Secretary announced the deaths of Sir James Paget, Correspondant for the Section of Medicine and Surgery, and of M. Matheron, Correspondant for the Section of Mineralogy.—The lunar eclipse of December 16, 1899, at the Observatory of Lyons, by M. Ch. André. The occultations of several stars were observed under excellent conditions.—Observations of the sun made at the Observatory of Lyons with the Brunner 16 cm. equatorial during the third quarter of 1899, by M. J. Guillaume. The results are expressed in three tables, showing the number of spots, their distribution in latitude, and the distribution of the faculæ in latitude.—On orthogonal systems, by M. Servant.—On the elementary law of electromagnetism, by M. Raveau. In the determination of the action of an indefinite current upon a magnetised needle, MM. Biot and Savart made the assumption that the effect of the wires from the battery could, owing to their distance, be safely neglected. According to the author this is not the case.—On the manganic oxidation of citric and malic acids, by M. G. Denigès. By the direct oxidation of citric acid with potassium permanganate, a good yield of acetone-dicarboxylic acid is produced, easily separable by mercuric sulphate in the form of an insoluble mercury compound. Malic acid, similarly oxidised, but treated with mercuric acetate instead of the sulphate, gives oxalacetic acid. The author suggests that these reactions may be advantageously utilised in analysis.—On acidimetry, by MM. Henri Imbert and A. Astruc. A study of the acidimetry of weak acids, including phenols, fatty and aromatic acids, halogen and nitro-derivatives of the acids, polyphenolic and amine acids, with the three indicators helianthine A, phenolphthalein, and Porrier's blue.—On some amines containing the camphor ring, by M. G. Blanc. The reduction of isolaunonic nitrile was attempted in the hope of producing β -aminocampholene, the amide of β -campholenic acid. The reduction proved to go further than this, a saturated base $C_9H_{15}.CH_2.NH_2$ being produced, of which the chlorhydrate, nitrate, chloraurate, sulphate, oxalate, picrate, benzoyl derivative, and corresponding urea are described. The reaction of the base with ethyl iodide was also studied.—On the allotropy of benzophenone, by M. Echsner de Coninck. It is shown that among the conditions governing the transformation of the stable modification of benzophenone into the unstable form, the phenomenon of slow oxidation is one of the most important.—The green pigment of *Ananila muscaria*, by M. A. B. Griffiths.—On the soluble ferments produced during germination of seeds with horny albumen, by MM. Em. Bourquelot and H. Hérissy. The seeds of *Trigonella Frenum graecum* and of *Medicago sativa* behave in a similar manner to

the Carob bean during germination, secreting soluble ferments capable of hydrolising and rendering assimilable the reserve carbohydrates. The action of these ferments is comparable with that of warm dilute sulphuric acid.—The variations of plankton at Lake Chauvet, by M. Bruyant.—On the constitution of the ovarian follicle of reptiles, by Mlle. Marie Loyez. The follicle of reptiles is composed of two kinds of cells; small ordinary follicular cells, and large cells like young ovules, which may be considered as true abortive ovules, and the function of which is probably to assist in the formation of the vitellus.—Experiments on the freezing of ciders, by M. Descours-Desacres. A study of the fractional freezing of cider and perry.—Researches on beer, by M. Van Laer. It frequently happens that specimens of beer, which are clear and brilliant by transmitted light, appear to be turbid when examined by reflection. This disease, which is technically known as *double face* or *treeeskinde*, is due to contamination with a bacillus, named by the author *Bacillus viscosus bruxellensis*. A detailed account of the methods of isolation and cultivation of this bacillus is given.—On the plagioliparites of Cape Marsa (Algeria), by MM. L. Duparc and F. Pearce.

January 8.—M. Maurice Lévy in the chair.—Remarks on an earthquake in the province of Rhenish Hesse on December 20, 1899, by the French Consul at Frankfort-on-Maine.—Observations of the diameter and flattening of Jupiter, by M. G. Bigourdan. Since the calculated and found values for the motion of the fifth satellite of Jupiter are not in agreement, it appeared to be advisable to redetermine the magnitudes of the planet's diameter and flattening, since both these enter into the calculations. The mean equatorial diameter was found to be $38''.55$, the mean polar diameter $36''.09$, giving a flattening of $1/15.7$.—Observation of the partial eclipse of the moon of December 16, 1899, made at the Observatory of Besançon, by M. P. Chafardet. The observations were interrupted by clouds at the commencement of the eclipse, but the occultations of six stars were measured.—On the absolute value of the magnetic elements on January 1, 1900, by M. Th. Moureaux.—On the theory of errors, by M. Estienne.—On the value of the internal pressure in the equations of Van der Waals and Clausius, by M. Daniel Berthelot. The author plots the curve $pv=f(p)$ (where p is the reduced critical pressure and v the reduced critical volume), and compares the experimental critical isotherm for carbon dioxide (Amagat) with the theoretical critical isotherms deduced from the formulæ of Van der Waals and Clausius, and shows that while neither coincides with the experimental curve along its whole length, the Van der Waals formula gives a good approximation for pressures above the critical pressure, deviating considerably at lower pressures; while the Clausius expression is just the opposite. By empirically modifying the internal pressure term, an expression can be obtained which fits the experimental curve closely, and still contains only three constants.—Action of the magnetic field upon the Becquerel rays, by M. P. Curie. The author confirms the results previously obtained by M. Becquerel, that the rays emitted by polonium are not deviated by the magnetic field, and hence concludes that the preparation of polonium used by M. Giesel must differ essentially from that of the discoverer. Of the rays given off by radium, those deviated by the magnet form only a small part of the total radiation. The rays which suffer the most deviation in the magnetic field are those possessing the greatest penetrating power.—On the penetration of those Becquerel rays which are not deviable in the magnetic field, by Mme. Skłodowska-Curie. There appears to be a fundamental difference between those radiations from radium which are deviated in the magnetic field and those which are not. For the former, the coefficient of absorption decreases, or perhaps remains constant, when the thickness of the material which they are traversing remains constant, while the non-deviable rays, on the contrary, are more easily absorbed the greater the thickness of the material they have passed through. This singular law of absorption is different from that of any other known radiation.—On the nature of white light, by M. E. Carvallo. The author criticises the current hypothesis that white light consists of an undulation of the form $e^{-kt} \sin ht$, and shows that it leads to a maximum of intensity at a wave length not corresponding with the maxima found by Mouton and Langley. If white light is due to a damped vibration $e^{-kt} \sin ht$, the spectrum given by a grating should not be coloured, but consist of white light only.—Apparatus for instantaneous photography producing the maximum effect, by M. Guido Sigriste. The modifications embodied

in the apparatus described consist of a means of regulating the width of the slit of the shutter, keeping the edges absolutely parallel, and of moving the plane of the shutter a small determinate distance (0.1 mm.) from the focal planes. The times of exposure can be varied from 1/40 to 1/5000 of a second; the photographs with this instrument are very free from fog, and give the true light-values to the objects.—Application of the phase rule to alloys and to rocks, by M. H. Le Chatelier.—On the rhodio-cyanides, by M. E. Leidié. A detailed account is given of the best method of preparing the double cyanide of rhodium and potassium, which has the constitution $K_6Rh_2(CN)_{12}$. The crystals are isomorphous with the ferricyanide, cobalticyanide, manganicyanide, and chromicyanide of potassium.—New microchemical reactions of copper, by M. Pozzi-Escot. Ammonium iodide is added to the ammoniacal solution of copper salt; characteristic brownish-black rhomboidal tables are deposited.—On the presence of vanadium, molybdenum and chromium in plants, by M. Eug. Demarcay.—Mechanism of insufficient development in the offspring of diseased mothers, by MM. Charrin, Guillemonat and Levaditi.—On the andesites and basalites of Cape Marsa, by MM. L. Duparc and F. Pearce.

DIARY OF SOCIETIES.

THURSDAY, JANUARY 18.

ROYAL SOCIETY, at 4.30.—Upon the Development of the Enamel in certain Osseous Fish: C. S. Tomes, F.R.S.—Further Observations on "Nitragin" and on the Nature and Functions of the Nodules of Leguminous Plants: Miss M. Dawson.—On the Innervation of Antagonistic Muscles, Sixth Note: Prof. Sherrington, F.R.S.—On the Viscosity of Argon as affected by Temperature: Lord Rayleigh, F.R.S.—On the Behaviour of the Becquerel and Röntgen Rays in a Magnetic Field: Hon. R. J. Strutt.—On an Experimental Investigation of the Thermo-dynamical Properties of Superheated Steam by Prof. Osborne Reynolds' Method: J. H. Grindley.

ROYAL INSTITUTION, at 3.—The Senses of Primitive Man: Dr. W. H. R. Rivers.

SOCIETY OF ARTS (Indian Section), at 4.30.—Our Work in India in the Nineteenth Century: Sir William Lee-Warner, K.C.S.I.

LINNEAN SOCIETY, at 8.—On the Existence of Nasal Secretory Sacs and of a Nasopharyngeal Communication in the Teleostei: H. M. Kyle.—On the Origin of the Basidiomycetes: George Massee.

CHEMICAL SOCIETY, at 8.—Nitrogen Halogen Compounds: Julius Steiglitz and E. E. Slosson.—Chlorine Derivatives of Pyridine. Part V. Synthesis of α -Dichloropyridine and Constitution of Citrazinic Acid: W. J. Sell and F. W. Dootson.—Action of Fuming Nitric Acid on α -Dibromocamphor: Dr. A. Lapworth and E. M. Chapman.—Electrolysis of Nitrogen Hydrides and of Hydroxylamine: Dr. E. C. Szarvasy.

FRIDAY, JANUARY 19.

ROYAL INSTITUTION, at 9.—Flight: Lord Rayleigh.

EPIDEMIOLOGICAL SOCIETY, at 8.30.—The Utility of the Bacteriological Examination of the Throats of School Children during an Epidemic of Diphtheria: K. W. Goadby.—Advantages of Bacteriological Diagnosis as instanced by the History of an Outbreak of Diphtheria in a Large School: F. H. Berry.

MONDAY, JANUARY 22.

SOCIETY OF ARTS, at 8.—The Nature and Yield of Metalliferous Deposits: Bennett H. Brough.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—An Expedition to the Summit of Mount Kenya, British East Africa: H. J. Mackinder.

TUESDAY, JANUARY 23.

ROYAL INSTITUTION, at 3.—Structure and Classification of Fishes: Prof. E. Ray Lankester.

ZOOLOGICAL SOCIETY, at 8.30.—Note on some Remains of *Grypotherium* (*Neomylodon*) *listai* and Associated Mammals, from a Cavern near Consuelo Cove, Last Hope Inlet, Patagonia: A. Smith-Woodward.—On a Collection of Insects and Arachnids made in 1895 and 1897 in Somaliland, with Descriptions of New Species: C. V. A. Peel and others.—On the Mammals obtained in Southern Abyssinia by Lord Lovat during an Expedition from Berbera to the Blue Nile: W. E. de Winton.

MINERALOGICAL SOCIETY, at 8.—Mineralogical Notes: Prof. Miers.—On the Constitution of the Mineral Arsenates and Phosphates. Part IV. Beudantite: Mr. Hartley.—Petrographical Notes on some Rock-Specimens from the Little Island of Trinidad, South Atlantic: Mr. Prior.—A New Method of Deriving the Thirty-two Classes of Crystal Symmetry: Mr. Barlow.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Swing-Bridges over the River Weaver at Northwich: J. A. Sauer.

ROYAL GEOGRAPHICAL SOCIETY, at 8.—Note on Dr. Vogel's Method of Preparing Subhaloid Salts of Silver: Major-General J. Waterhouse.

WEDNESDAY, JANUARY 24.

SOCIETY OF ARTS, at 8.—Local Government and its relation to Parish Water Supply and Sewerage: W. O. E. Meade-King.

GEOLOGICAL SOCIETY, at 8.—Contributions to the Geology of British East Africa. Part II. The Geology of Mount Kenya; Part III. The Elaeolite-Syenite and Fourchites intrusive in the Coast Series: Dr. J. W. Gregory.—Fossils in the University Museum, Oxford. II. On Two New Species and Genera of Crinoidea; III. A New Species of *Oldhamia*, a Worm-track from the Slates of Bray Head, Ireland: Prof. W. J. Sollas, F.R.S.

THURSDAY, JANUARY 25.

ROYAL SOCIETY, at 4.30.—*Probable Papers*: Mathematical Contributions to the Theory of Evolution—On the Law of Reversion: Prof. K. Pearson, F.R.S.—On the Mechanism of Gelation in Reversible Colloidal Systems: W. B. Hardy.—A Preliminary Investigation of the Conditions which determine the Stability of Irreversible Hydrosols: W. B. Hardy.—On the Effects of Strain on the Thermo-electric Qualities of Metals, Part II.: Dr. M. Maclean.—On the Periodicity in the Electric Touch of Chemical Elements: Prof. J. C. Bose.

ROYAL INSTITUTION, at 3.—The Senses of Primitive Man: Dr. W. H. R. Rivers.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Adjourned Discussion on the Report of the Institution's Visit to Switzerland.—*And if time permit*: An Electrolytic Centrifugal Process for the Production of Copper Tubes: Sherard Cowper-Coles.

FRIDAY, JANUARY 26.

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INSTITUTION OF MECHANICAL ENGINEERS, at 8.—Water Meters of the Present Day, with special reference to Small Flows and Waste in Dribbles: William Schönheyder.

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